

Application/Control Number: 09/690,721
Art Unit: 2654

Docket No.: 1999-0679

REMARKS

Reconsideration and allowance are requested. No claim is amended and claims 1 - 28 are pending.

Applicants note that the Gorin article discussed in the Section 103 rejection is not listed in the PTO 892 form. Applicants request that the Examiner provide another Notice of References Cited with the Gorin article listed.

Rejection of Claims 1 - 28 Under Section 103

The Examiner rejects claims 1 - 28 under Section 103 as being unpatentable in view of Gorin's article entitled "Processing of Semantic Information in fluently spoken language" ("Gorin") in view of U.S. Patent No. 5,651,095 to Ogden ("Ogden"). Applicant traverses this rejection because as we shall see below, one of skill in the art would not be motivated to combine Gorin with Ogden. Furthermore, even if combined, the combination would still not teach the invention.

To establish a *prima facie* case of obviousness, the Examiner must meet three criteria. First, there must be some motivation or suggestion, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to combine the references. Second, there must be a reasonable expectation of success, and finally, the prior art references must teach or suggest all the claim limitations. The Examiner bears the initial burden of providing some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." MPEP 2142.

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If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purposes, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Further, if the proposed modification of the prior art would change the principle operation of the prior art invention being modified, then the teaching of the reference is not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). The principles outlined in both these cases are applicable here.

A spoken dialog system that may engage a person in a dialog that includes listening to the user input (automatic speech recognition (ASR)), understanding the input, generating a response and "speaking" the response includes a variety of highly technical components. First, ASR technology must be used to "recognize" the user's speech and convert that speech into text. Next, the spoken dialog system must understand or process the meaning of the user's speech. What is the user trying to say or what does the user want? The understanding component is often performed by a spoken language understanding (SLU) module that receives text and identified the meaning of the text or the task objective of the person. Once the meaning of the words is understood, the dialog system must generate a response using one or modules such as a dialog manager module or a spoken language generation module. This is typically done by generating text of a response, something like, "Your account balance is five hundred dollars." Finally, a speech generation engine will take that text and synthesizes the audible speech heard by the person. This is often referred to as text-to-speech.

These technologies each differ in their application and technical requirements. Researchers primarily focus on one or two aspects of this process, such as on automatic speech recognition or text-to-speech processing. The reason there is no motivation or reasons to combine Gorin with Ogden is that Gorin focuses on the spoken language understanding (SLU) module and Ogden focuses on the speech synthesis component. Because the subject

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matter of these two references are directed to different components of a spoken dialog system, their focus and purpose are different and therefore one of skill in the art would not blend these two teachings.

For example, Gorin states at the outset that the purpose of the paper is to construct “machines which learn to understand and act upon fluently spoken input.” His paper discusses how a system receives user speech input and proposes an algorithm that automatically acquires salient grammar fragments for a task (a task may be to receive an account balance or to book a flight). Determining the salient grammar fragments in user input helps the SLU module to more accurately assess the meaning and task of the person. The SLU module discussed by Gorin in the overall spoken dialog process is after the ASR module that receives speech signals and produced text. The text is then transmitted to the SLU module of Gorin to identify a task or meaning of the input.

The text-to-speech or audible response of the system to the person as taught by Ogden is downstream from the SLU module. Ogden focuses on speech synthesis and as stated in the Abstract, discloses a speech synthesis system that includes a phonological converter, a word parser, a syllable parser, temporal and parametric interpreters, a file and a synthesizer. FIG. 4 illustrates the logical flow of Ogden’s invention which receives as its input “regularized text.” Gorin’s SLU algorithm would operate “upstream” from the generation of the regularized text which is input into the word parser 11 and syllable parser 10 of FIG. 4. In other words, Gorin’s SLU processing would have already “understood” the text from the automatic speech recognizer and transmitted the meaning of those words to a dialog manager or language generation module which would create the regularized text for input to the speech synthesizer disclosed by Ogden.

Ogden states in his summary in col. 2, lines 45 - 47 that he provides “a speech synthesis system for user in producing a speech waveform from an input text which includes words from a defined word class....” The Examiner referenced the teachings in Ogden

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regarding morphemes in col. 2. However, these individual morphemes utilized in the defined word class are stored in a knowledge base for use in speech synthesis. The knowledge base is found as part of the "means for parsing" which has a purpose of determining if a word belongs to a defined word class. The word classes aid in finding stress patterns of words and phonological features of words to identify a set of parameters for driving the speech synthesizer to produce the speech waveform. Therefore, the means for parsing of Ogden has the purpose of identifying how to synthesize speech to be as normal sounding as possible.

The Examiner asserts that it would be obvious to use the inference engine of Gorin with the morphemes as taught by Ogden. However, Applicant traverses this conclusion because one of skill in the art would understand that the process of spoken language understanding, the focus of Gorin's paper, is very different from Ogden's subject matter which is speech synthesis. There is further no suggestion in Ogden that his subject matter would be useful or helpful in the spoken language understanding component of a spoken dialog system. He is totally focused on speech synthesis.

Further, the Examiner states on page 3 of the Office Action that one of skill in the art would efficiently use the language (morphemes and submorphemes) by using the within language prediction to improve automatic speech recognition. Applicant respectfully notes that neither Gorin nor Ogden's subject matter is directed to automatic speech recognition. As explained above, Gorin relates to the SLU components and Ogden to speech synthesis. The basis upon which these references are combined as articulated by the Examiner is incorrect.

Therefore, Applicant submits that there is no motivation to combine these references because of their disparate nature of their teachings. Thus, claims 1 - 28 are patentable for this reason.

Further reasons exist for the patentability of claim 1 - 28. Blending Ogden with Gorin would alter the fundamental purpose and operation of one of both of the references. Based on the discussion above, Applicant submits that if Ogden's speech synthesis approach were to

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be blended with Gorin's SLU module algorithm, the "means for parsing" of Ogden would have to be modified for the SLU module because the process would change from synthesizing speech to language understanding.

The same issue would exist if the algorithm of Gorin were incorporated into Ogden. The purpose and design of the algorithm to understand speech would be completely altered to apply it to speech synthesis. The required modification to either reference which would be required to blend their teachings can only lead to the legal conclusion that it would not be obvious to combine them. Therefore, there is no reason or motivation to combine Ogden with Gorin.

For the foregoing reasons, Applicant submits that claim 1 - 28 are patentable and in condition for allowance.

CONCLUSION

Having addressed the rejection of claims 1 - 28, Applicant respectfully submits that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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By: 

Correspondence Address:
Samuel H. Dworetzky
AT&T Corp.
Room 2A-207
One AT&T Way
Bedminster, NJ 07921

Thomas M. Isaacson
Attorney for Applicants
Reg. No. 44,166
Phone: 410-414-3056
Fax No.: 410-510-1433